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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,802	10/06/2004	Joseph M. Jacobson	H-390	5801

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EXAMINER	
LESPERANCE, JEAN E	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,802	JACOBSON ET AL.	
	Examiner	Art Unit	
	Jean E. Lesperance	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/3/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The application filed October 6, 2004 is presented for examination and claims 1-25 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPAN 20050104804 ("Feenstra et al.").

Regarding claim 1, Feenstra et al. teach a diagrammatic cross-section of a part of a display device 1 according to the invention. Between two transparent substrates or support plates 3, 4 a first fluid 5 and a second fluid 6 are provided, which are immiscible with each other. The first fluid 5 is for instance an alkane like hexadecane or as in this example a (silicone) oil. The second fluid 6 is electroconductive or polar, for instance water or a salt solution (e.g. a solution of KCl in a mixture of water and ethyl alcohol). In a first state, when no external voltage is applied (FIG. 1a) the fluids 5, 6 adjoin the first and second transparent support plates 3, 4 of e.g. glass or plastic. On the first support plate 3 a transparent electrode 7, for example indium (tin) oxide is provided and an intermediate hydrophobic layer 8, in this example an amorphous fluoropolymer (AF1600) (page 2, paragraph 0029) wherein in Fig.2, and electric field or voltage is applied to the first fluid 5 and Fig.1 is where no electric field or voltage is applied

wherein the area 5 in Fig.5 is smaller that the area of Fig.2. The prior art does not specifically teach a concealment member. However, the prior art teaches in Fig.5, the first fluid (oil) that is inside a cover. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify in Fig.5, the first fluid (oil) that is inside a cover to obtain a concealment member because this would prevent intermixing of the material of both sub-layers adjoining the wall the device preferably comprises means to prevent part of the other fluid layer and the further other fluid layer to intermix in the second state (0019).

Regarding claims 2-4, Feenstra et al. teach the dielectric layer between an electrode and the surface of the part of the first support plate has a varying dielectric constant (paragraph 0013); this effect can be used for electro-optical effects, especially if a colored oil is used a display effect. This is achieved with an optically active oil, for example an opaque or reflective oil. In other embodiments a fluid with optically active particles is used or a dye material is dissolved in the oil. The electro-optical effect may either be used in a transparent way, by using a back light, as for instance known from LCD technology or in a reflective way by using a (diffusive) reflector (paragraph 0031); in Fig.1b, the first concealed fluid (5) is extended along the planar surface of the substrate and spaced evenly with each other in the parallel direction (see Fig.1b).

Regarding claim 5, Feenstra et al. teach a substrate 5 wherein an electric field or voltage is applied and wherein the transparent substrate (5) above the first (oil) and second (water) fluids and wherein when light is applied to the substrate, looking at the first fluid through the substrate is different from looking at the second fluid and they also

have a different wavelength of lights and transmit a different light transmittance from the first and second fluids; a diagrammatic cross-section of a part of a display device 1 according to the invention. Between two transparent substrates or support plates 3, 4 a first fluid 5 and a second fluid 6 are provided, which are immiscible with each other. The first fluid 5 is for instance an alkane like hexadecane or as in this example a (silicone) oil. The second fluid 6 is electroconductive or polar, for instance water or a salt solution (e.g. a solution of KCl in a mixture of water and ethyl alcohol). In a first state, when no external voltage is applied (FIG. 1a) the fluids 5, 6 adjoin the first and second transparent support plates 3, 4 of e.g. glass or plastic. On the first support plate 3 a transparent electrode 7, for example indium (tin) oxide is provided and an intermediate hydrophobic layer 8, in this example an amorphous fluoropolymer (AF1600) (page 2, paragraph 0029) wherein in Fig.2, and electric field or voltage is applied to the first fluid 5 and Fig.1 is where no electric field or voltage is applied wherein the area 5 in Fig.5 is smaller that the area of Fig.2. The prior art does not specifically teach the first fluid absorbing at least one wavelength. However, the prior art teaches a fluid with optically active particles is used or a dye material is dissolved in the oil. The electro-optical effect may either be used in a transparent way, by using a back light, as for instance known from LCD technology or in a reflective way by using a (diffusive) reflector. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify a fluid with optically active particles is used or a dye material is dissolved in the oil. The electro-optical effect may either be used in a transparent way, by using a back light, as for instance known from LCD technology or in

a reflective way by using a (diffusive) reflector to obtain the first fluid absorbing at least one wavelength because this would prevent intermixing of the material of both sub-layers adjoining the wall the device preferably comprises means to prevent part of the other fluid layer and the further other fluid layer to intermix in the second state (0019).

Claims 6-14 are rejected on the same rational as claims 1 and 5.

Regarding claim 15, Feenstra et al. teach a first substrate Fig.1a (4), a first fluid Fig.1a (5), a light-transmissive second fluid Fig.1a (6) having a first fluid and at least one second fluid immiscible with each other within a space between a first support plate and a second support plate, in Fig.4, there are electrode 7 representing the first electrode, electrode 11 representing the second electrode, and electrode 12 representing the third electrode; a diagrammatic cross-section of a part of a display device 1 according to the invention. Between two transparent substrates or support plates 3, 4 a first fluid 5 and a second fluid 6 are provided, which are immiscible with each other. The first fluid 5 is for instance an alkane like hexadecane or as in this example a (silicone) oil. The second fluid 6 is electroconductive or polar, for instance water or a salt solution (e.g. a solution of KCl in a mixture of water and ethyl alcohol). In a first state, when no external voltage is applied (FIG. 1a) the fluids 5, 6 adjoin the first and second transparent support plates 3, 4 of e.g. glass or plastic. On the first support plate 3 a transparent electrode 7, for example indium (tin) oxide is provided and an intermediate hydrophobic layer 8, in this example an amorphous fluoropolymer (AF1600) (page 2, paragraph 0029) wherein in Fig.2, and electric field or voltage is applied to the first fluid 5 and Fig.1 is where no electric field or voltage is applied

wherein the area 5 in Fig.5 is smaller that the area of Fig.2. The prior art does not specifically teach the first fluid absorbing at least one wavelength. However, the prior art teaches a fluid with optically active particles is used or a dye material is dissolved in the oil. The electro-optical effect may either be used in a transparent way, by using a back light, as for instance known from LCD technology or in a reflective way by using a (diffusive) reflector. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify a fluid with optically active particles is used or a dye material is dissolved in the oil. The electro-optical effect may either be used in a transparent way, by using a back light, as for instance known from LCD technology or in a reflective way by using a (diffusive) reflector to obtain the first fluid absorbing at least one wavelength because this would prevent intermixing of the material of both sub-layers adjoining the wall the device preferably comprises means to prevent part of the other fluid layer and the further other fluid layer to intermix in the second state (0019).

Regarding claims 16-18, Feenstra et al. teach the dielectric layer between an electrode and the surface of the part of the first support plate has a varying dielectric constant (paragraph 0013); this effect can be used for electro-optical effects, especially if a colored oil is used a display effect. This is achieved with an optically active oil, for example an opaque or reflective oil. In other embodiments a fluid with optically active particles is used or a dye material is dissolved in the oil. The electro-optical effect may either be used in a transparent way, by using a back light, as for instance known from LCD technology or in a reflective way by using a (diffusive) reflector (paragraph 0031);

The threshold field will be first exceeded at the center of the pixel, where the insulator has the minimum thickness. Upon increasing the field, the position at which the applied field equals the threshold field will move outward, hence moving the oil to the side of the pixel. The schematic drawing in FIG. 3 shows a cross-section of a pixel that is either circularly symmetric, or has a rectangular shape. In the first case the oil will be pushed outward in a ring-like shape, starting from a single point in the center of the pixel. For a rectangular pixel one can envisage a insulator shaped like a slice of cylinder so that the oil break-up will start along a line, and the oil is pushed out in a curtain-like fashion (paragraph 0034).

Regarding claim 19, Feenstra et al. teach a fluid Fig.1a (5), a transparent substrate Fig.1a (4), in Fig.4, there are electrode 7 representing the first electrode, electrode 11 representing the second electrode, and electrode 12 representing the third electrode; a diagrammatic cross-section of a part of a display device 1 according to the invention. Between two transparent substrates or support plates 3, 4 a first fluid 5 and a second fluid 6 are provided, which are immiscible with each other. The first fluid 5 is for instance an alkane like hexadecane or as in this example a (silicone) oil. The second fluid 6 is electroconductive or polar, for instance water or a salt solution (e.g. a solution of KCl in a mixture of water and ethyl alcohol). In a first state, when no external voltage is applied (FIG. 1a) the fluids 5, 6 adjoin the first and second transparent support plates 3, 4 of e.g. glass or plastic. On the first support plate 3 a transparent electrode 7, for example indium (tin) oxide is provided and an intermediate hydrophobic layer 8, in this example an amorphous fluoropolymer (AF1600) (page 2, paragraph 0029) wherein in

Fig.2, and electric field or voltage is applied to the first fluid 5 and Fig.1 is where no electric field or voltage is applied wherein the area 5 in Fig.5 is smaller that the area of Fig.2. The prior art does not specifically teach a cap member. However, the prior art teaches in Fig.5, the first fluid (oil) that is inside a cover. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify in Fig.5, the first fluid (oil) that is inside a cover to obtain a cap member because this would prevent intermixing of the material of both sub-layers adjoining the wall the device preferably comprises means to prevent part of the other fluid layer and the further other fluid layer to intermix in the second state (0019).

Regarding claims 20 and 21, Feenstra et al. teach a display device Fig.1a (1) which inherently includes a two-dimensional array; the second fluid Fig.1a (6) is water which is inherently hydropholic.

Regarding claim 22, Feenstra et al. teach a transparent substrate Fig.1a (4), a first fluid Fig.1a (5), a light-transmissive second fluid Fig.1a (6) having a first fluid and at least one second fluid immiscible with each other within a space between a first support plate and a second support plate, in Fig.4, there are electrode 7 representing the first electrode, electrode 11 representing the second electrode, and electrode 12 representing the third electrode; a diagrammatic cross-section of a part of a display device 1 according to the invention. Between two transparent substrates or support plates 3, 4 a first fluid 5 and a second fluid 6 are provided, which are immiscible with each other. The first fluid 5 is for instance an alkane like hexadecane or as in this example a (silicone) oil. The second fluid 6 is electroconductive or polar, for instance

water or a salt solution (e.g. a solution of KCl in a mixture of water and ethyl alcohol). In a first state, when no external voltage is applied (FIG. 1a) the fluids 5, 6 adjoin the first and second transparent support plates 3, 4 of e.g. glass or plastic. On the first support plate 3 a transparent electrode 7, for example indium (tin) oxide is provided and an intermediate hydrophobic layer 8, in this example an amorphous fluoropolymer (AF1600) (page 2, paragraph 0029) wherein in Fig.2, and electric field or voltage is applied to the first fluid 5 and Fig.1 is where no electric field or voltage is applied wherein the area 5 in Fig.5 is smaller that the area of Fig.2. The prior art does not specifically teach the first fluid absorbing at least one wavelength. However, the prior art teaches a fluid with optically active particles is used or a dye material is dissolved in the oil. The electro -optical effect may either be used in a transparent way, by using a back light, as for instance known from LCD technology or in a reflective way by using a (diffusive) reflector. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify a fluid with optically active particles is used or a dye material is dissolved in the oil. The electro -optical effect may either be used in a transparent way, by using a back light, as for instance known from LCD technology or in a reflective way by using a (diffusive) reflector to obtain the first fluid absorbing at least one wavelength because this would prevent intermixing of the material of both sub-layers adjoining the wall the device preferably comprises means to prevent part of the other fluid layer and the further other fluid layer to intermix in the second state (0019).

Regarding claim 23, Feenstra et al. teach the first electrode Fig.4 (7) and second electrode Fig.4 (11), first and second fluids Fig.4 (5' and 6) between electrodes 7 and 11; the pixel walls 13 do not extend across the whole pixel thickness. It appears that the oil film 5 is very stable, which is enhanced even further as the pixel size decreases. So during switching the oil remains confined in each area providing the wall is not less than twice the height of the off-state oil film thickness. This means that a common channel can be employed for the fluid 6, which simplifies display fabrication and driving. The single electrical contact to the liquid can then be made externally (page 4, paragraph 0057). The prior art does not specifically teach the first and second stable states. However, the prior art teaches the pixel walls 13 do not extend across the whole pixel thickness. It appears that the oil film 5 is very stable, which is enhanced even further as the pixel size decreases. So during switching the oil remains confined in each area providing the wall is not less than twice the height of the off-state oil film thickness. This means that a common channel can be employed for the fluid 6, which simplifies display fabrication and driving. The single electrical contact to the liquid can then be made externally (page 4, paragraph 0057). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the pixel walls 13 do not extend across the whole pixel thickness. It appears that the oil film 5 is very stable, which is enhanced even further as the pixel size decreases. So during switching the oil remains confined in each area providing the wall is not less than twice the height of the off-state oil film thickness. This means that a common channel can be employed for the fluid 6, which simplifies display fabrication and driving. The single electrical

contact to the liquid can then be made externally (page 4, paragraph 0057) to obtain the first and second stable states because this would prevent intermixing of the material of both sub-layers adjoining the wall the device preferably comprises means to prevent part of the other fluid layer and the further other fluid layer to intermix in the second state (0019).

Regarding claim 24-25, Feenstra et al. teach the first fluid Fig.1a (5) is water and the second fluid Fig.1a (6) is oil; this effect can be used for electro-optical effects, especially if a colored oil is used a display effect. This is achieved with an optically active oil, for example an opaque or reflective oil. In other embodiments a fluid with optically active particles is used or a dye material is dissolved in the oil. The electro-optical effect may either be used in a transparent way, by using a back light, as for instance known from LCD technology or in a reflective way by using a (diffusive) reflector (paragraph 0031).

Conclusion

4. Any inquiry concerning this communication or earlier communications from the ably examiner should be directed to Jean Lesperance whose telephone number is (571) 272-7692. The examiner can normally be reached on from Monday to Friday between 10:OOAM and 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (571) 272-7691.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(571) 273-8300 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Jean Lesperance

Art Unit 2629

Date 10/31/2007

RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600